

REMARKS/ARGUMENTS

Claims 1 - 20 and 23 - 25 were pending when the Application was last examined. Claims 19 and 20 are being canceled. Claims 1, 9, 16 and 23 are being amended. Claims 1 - 18 and 23 - 25 are now pending of which Claims 1, 9, 16 and 23 are independent.

The Amendment filed on February 22, 2007 in response to the Office action of December 26, 2006, but prior to receiving the Advisory Action of March 12, 2007, was not entered by the Examiner. As such, the current amendments, modify the claims as they existed prior to receiving the Office action of December 26, 2006.

The Office action had rejected Claims 9, 12, 15, 16 and 18 under 35 U.S.C. §102(b) as being anticipated by Kishino et al. (U.S. Patent No. 5,965,978).

The Office action had also made the following obviousness rejections under 35 U.S.C. §103: Claims 1 - 5, 8 and 23 - 25 are rejected over Jaskie et al. (U.S. Patent No. 6,410,101) and further in view of Kishino; Claim 11 is rejected over Kishino; Claim 13 is rejected over Kishino and further in view of Toyota et al. (U.S. Patent No. 6,900,066); Claims 10, 17, 19 and 20 are rejected over Kishino in view of Jaskie; Claim 6 is rejected over Jaskie, Kishino and further in view of Toyota; Claim 7 is rejected over Jaskie, Kishino and further in view of Peng (U.S. Patent No. 5,726,530); and Claim 14 is rejected over Kishino in view of Peng.

In view of the proposed amendment to claim 9, that was not entered, the Advisory Action stated that an anode made of indium tin oxide was very well known in the art. Applicant submits that in the particular context, the type of material was not suggested by the cited reference. However, this limitation is not included in the current amendment to the claim.

Further, the Advisory Action responded to Applicant's argument that a combination of

Jaskie and Kishino would result in the metal part of the anode of Jaskie extending out and not the transparent part. The Advisory Action indicated that Jaskie disclosed a transparent conductive layer as the anode input terminal to which the anode voltage was applied and Kishino disclosed that the anode voltage was applied to an extended anode input terminal which resulted in a configuration with secured electric conduction between the anode input terminal and the anode lead. According to the Advisory Action, it would have been obvious to modify the transparent conductive anode of Jaskie by extending the transparent anode input terminal outside as taught by Kishino for securing good electric conduction between the anode terminal and the anode lead.

However, as Applicant has respectfully set forth in the remarks that follow, the motivation of securing a good electric conduction favors connecting the metal electrode to a voltage source as opposed to connecting a transparent electrode that may be formed from a less conductive material, such as ITO, to the voltage source.

35 U.S.C. §103 Rejection of Independent Claims 1 and 23

Claim 1 recites in part "an illumination assembly ... [including] (a) a transparent conductive layer ... having a portion extending beyond the sealant as an anode input terminal to which an anode voltage is applied, (b) a phosphor screen ... and (c) a metal layer located on the phosphor screen within the vacuum assembly, a portion of the metal layer contacting and electrically connected to the transparent conductive layer." (Emphasis added.) Applicant submits that Claim 1 is patentable over a combination of Jaskie and Kishino.

In rejection of Claim 1, the Examiner cites to Jaskie for disclosing an illumination assembly including a transparent conductive layer and having an anode input terminal, to which an anode voltage is applied, a phosphor layer, and a metal layer (reflective layer) formed on the screen within the vacuum assembly and a portion of the metal layer electrically connecting to the

transparent conductive layer. (Office action, p. 4 - 5.) Kishino is cited for disclosing that the anode input terminal is extended beyond the sealant and the anode voltage is applied through an anode lead. (Id.) The Examiner finds it obvious to one of skill in the art to modify the transparent conductive layer of Jaskie by including an anode input terminal extending outside the sealant, as shown by Kishino, for securing good electrical conduction between the anode input terminal and the anode lead. (Office action, p. 5.) Applicant respectfully traverses this rejection.

Jaskie discloses an anode plate 100 that includes a glass substrate 122, an anode 124 made from a transparent conductive material (e.g., ITO) and disposed on the substrate 122, phosphor layers 126 disposed on the anode 124, and a first layer 121 disposed on the phosphors 126 including a reflective layer 128. (Jaskie, figure 1, col. 2, lines 18 - 34.) The reflective layer 128 is preferably made from aluminum, gold, titanium, platinum, or palladium. (Jaskie, col. 2, lines 61 - 64.) Jaskie discloses that a potential is applied to the transparent anode 124 and not to the reflective layer 128. (Jaskie, figure 3, col. 4, lines 11 - 14.) As the Examiner observes, Jaskie does not disclose extending the anode 124 or the reflective layer 128 outside the chamber. (Jaskie, figure 3.)

Kishino discloses a display portion 7 that includes a fluorescent material 5 and a metal backed layer 6 together forming an anode. (Kishino, figure 3, col. 4, lines 18 - 24.) An anode terminal 6a that is part of the metal backed layer 6 extends out from the vacuum sealed portion through a sidewall portion 4. (Kishino, figure 3, col. 5, lines 10 - 11.) The anode terminal 6a extends into a getter room 23 to be connected to an anode lead 28. (Kishino, figure 3, col. 5, lines 18 - 29 and 43 - 46.)

The Office action concludes that it would have been obvious to combine Jaskie with Kishino and, as a result, extend the transparent conductive layer 124 of Jaskie outside the sealant

and apply the anode voltage to the extended part of the transparent layer 124.

Arriving at the extended transparent electrode from the combination of Jaskie with Kishino includes two steps in need of justification:

1) what is the motivation to combine Jaskie with Kishino? and

2) why extend the transparent electrode outside when Kishino shows the metal electrode to be extended outside the vacuum chamber?

In response to the first question and as for the motivation to combine, Jaskie does not discuss the particulars of the connection of the transparent electrode 124 to the voltage source 118 (Jaskie, col. 4, lines 11 - 14,) and, in Kishino, the reason cited for extending the metal backed layer 6 outside, is to protect the sidewall 4 of the sealed portion from dielectric breakdown as a result of the high voltage applied to the anode (Kishino, col. 10, lines 4 - 10 and col. 2, lines 10 - 15, and lines 30 - 33). Both the Office action (bottom paragraph of page 5) and the Advisory Action (second paragraph of the continuation page) point to securing good electric conduction between the anode input terminal and the anode lead.

If the motivation to combine is securing good electric conduction, a metal electrode is known to provide a better electric contact and transparent electrodes are generally used despite their weaker electrical conductivities. So, securing good electric conduction does not appear to be a persuasive motivation to combine when the combination is likely to have worse electrical conductivity properties than one of the references combined.

In response to the second question, neither reference shows an extended transparent electrode and, regarding why extend the transparent electrode instead of the metal electrode, neither reference provides a clue: Jaskie is not extending the electrodes and does not discuss

doing so; Kishino discloses only one electrode, i.e. the metal electrode, and therefore cannot include a discussion of why extend the ITO and not the metal. Further, switching the metal electrode with a transparent electrode is generally inconsistent with the motivation cited for the combination of the two references. So, even if the references are combined, there is no basis for switching the electrode that is extended out in Kishino with a different type of electrode that is not shown to be extended in either reference.

In contrast to the cited references, a response to the second question above is suggested in the specification of the current Application:

However, there are problems associated with metal layer 5, and in particular, with metal layer 5 made of aluminum. That is, although an adhesive strength of metal layer 5 is exceptional immediately following a layer forming process such as sputtering, if thermal deformation occurs as a result of a baking process following sputtering, the adhesivity of metal layer 5 is significantly reduced. Accordingly, metal layer 5 having undergone a baking process is easily separated from faceplate 1 such that it is unable to perform its function. This makes metal layer 5 unsuitable for use as a terminal that receives the anode voltage.

Further, the strength of metal layer 5 is reduced for the above reasons such that metal layer 5 is damaged in the vicinity of sealant 7. This reduces the degree of vacuum in the FED, negatively affecting the overall operation of the display.

(Specification, p. 3, lines 1 - 14, emphasis added)

One of the embodiments of the present invention is described by the specification as including the following:

Anode input terminal 26' may be made of an ITO film, which has a high adhesivity with

respect to faceplate 4, or may be realized using a metal film made of Ni or Cr, for example, that does not lose adhesivity even after baking.

(Specification, p. 12, lines 7-9; see also p. 13, lines 17 - 23.)

In short, Jaskie shows both metal and ITO parts of the anode inside the chamber; Kishino shows the metal anode extending out. There is no obvious reason why a combination of Kishino with Jaskie result in the ITO part of the anode extending out when all figures of Jaskie show the metal and the ITO to be electrically connected and when extending the reflective layer 128 (metal) to be connected to the voltage source 118 would achieve a better electrical contact? Therefore, even the combination of these two particular references does not teach or suggest "a transparent conductive layer ... having a portion extending beyond the sealant as an anode input terminal to which an anode voltage is applied," of Claim 1.

As such, Jaskie, Kishino, or a combination of the two do not teach or suggest all the limitations of Claim 1. Accordingly, Claim 1 is believed to be allowable over the combination of the cited references.

Claims 2 - 8 are dependent on Claim 1 and are believed to be allowable because of their dependence from an allowable base claim.

Regarding independent Claim 23, the combination of Jaskie and Kishino does not appear to teach or suggest "a transparent conductive layer ... having an anode input terminal as a portion of the transparent conductive layer extending beyond the sealant to which an anode voltage is applied; a phosphor screen ... and a metal layer on the phosphor screen, and having a portion of the metal layer for contacting and electrically connecting to the transparent conductive layer within the vacuum assembly," that is claimed. As explained above, a combination of these references may not be read as suggesting to extend the transparent conductive layer.

Accordingly, Claim 23 is believed to be allowable over the combination of the cited references.

Claims 24 - 25 are dependent on Claim 23 and are believed to be allowable because of their dependence from an allowable base claim.

35 U.S.C. §102 Rejection of Independent Claims 9 and 16

Independent Claim 9 is amended to recite "A field emission display, comprising: a first substrate and a second substrate ... being sealed using a sealant ... a vacuum assembly is formed ... in a region encompassed by the sealant; an electron emission assembly ... and an illumination assembly ... wherein the illumination assembly includes a phosphor screen located on a first surface of the second substrate, a metal layer located on the phosphor screen within the vacuum assembly, and an anode input terminal extending from within the vacuum assembly to outside of the sealant, in which an end of the anode input terminal within the vacuum assembly contacts both the phosphor screen and the metal layer and a portion of the anode input terminal extending beyond the sealant is configured to receive an anode voltage." (Emphasis added.) Support for these amendments is found throughout the specification and drawings and, for example, in figure 5 and starting on line 17 of page 11 and ending on line 9 of page 12 of the specification. As amended, Claim 9 is not believed to be anticipated by Kishino or made obvious in view of this reference.

As explained above, the anode terminal of Kishino is an extension of the same material forming the metal backed layer 6, 52 that is disclosed to be a conductive material such as aluminum. (Kishino, col. 1, lines 45 - 54.) There is no separation shown or described between the anode terminal 6a and the metal-backed layer 6 and therefore no contact is described or required between the two. Accordingly, Kishino does not disclose that "the illumination assembly includes a phosphor screen ... a metal layer ... and an anode input terminal ... in which

an end of the anode input terminal within the vacuum assembly contacts both the phosphor screen and the metal layer " as claimed by Claim 9. (Emphasis added.) Accordingly, amended Claim 9 is neither anticipated nor suggested by Kishino and is believed to be allowable over this reference.

Claims 11, 12 and 15 depend from Claim 9 and are believed to be allowable for their dependence from an allowable base claim.

Claim 13 is rejected under 35 U.S.C. §103 as being obvious over Kishino and further in view of Toyota and Claim 14 is rejected over Kishino and further in view of Peng. Toyota is cited for disclosing the type of emission sources and Peng is cited for disclosing the insulation layer; neither cures the deficiency of Kishino in teaching or suggesting Claim 9. Accordingly, Claim 9 remains patentable over the combination of these references with Kishino and Claims 13 and 14, that depend from Claim 9, are believed to be allowable because of their dependence from an allowable base claim.

Independent Claim 16 is amended to recite "A flat panel display, comprising: a faceplate ... a backplate ... sidewalls positioned between the faceplate and the backplate to form an enclosed vacuum envelope ... a phosphor layer positioned on the faceplate interior side; a transparent conductive layer located between the faceplate and the phosphor layer; a metal layer positioned on the phosphor layer, wherein the metal layer is located entirely within the vacuum envelope, and wherein the transparent conductive layer includes an anode input terminal extending from within the vacuum envelope to outside the sidewalls." (Emphasis added.) Support for these amendments are found throughout the specification and drawings and, for example, in figure 4 and on page 8, lines 3 - 14 of the specification. As amended, Claim 16 is not believed to be anticipated by Kishino.

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As explained above, the anode of Kishino includes a fluorescent material and a metal backed material but not a "metal layer ... located entirely within the vacuum envelope" or "a transparent conductive layer formed between the faceplate and the phosphor layer," of amended Claim 16 and does not anticipate this claim.

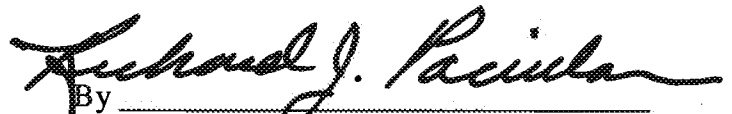
Claim 18 depends from Claim 16 and is believed to be allowable for its dependence from an allowable base claim.

Claim 17, that also depends from Claim 16, is rejected as being obvious over Kishino in view of Jaskie. As the above arguments provide, even a combination of Kishino and Jaskie does not teach or suggest that "the transparent conductive layer includes an anode input terminal extending from within the vacuum envelope to outside the sidewalls" of amended Claim 16. As such, amended Claim 16 is believed to be allowable over the combination of Kishino and Jaskie and Claim 17 is allowable because of dependence from an allowable base claim.

Therefore, in view of the above amendment and remarks it is submitted that the now pending claims are patentably distinct over the cited references and that all the rejections to the claims have been overcome. As such, withdrawal of the rejections and allowance of the above Application are requested.

Respectfully submitted,

CHRISTIE, PARKER & HALE, LLP


By _____

Richard J. Paciulan
Reg. No. 28,248
626/795-9900

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